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=> s tunnel? (8w) current
L1        23592 TUNNEL? (8W) CURRENT

=> s tunnel? (8w) current (s) (measur? or control? or monitor? or sens? or detect?)
(p) (electrode or gap or spac? or width or aperture or well or channel)
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'DETECT?) (P) '
   2 FILES SEARCHED...
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'DETECT?) (P) '
L2         2779 TUNNEL? (8W) CURRENT (S) (MEASUR? OR CONTROL? OR MONITOR? OR
                SENS? OR DETECT?) (P) (ELECTRODE OR GAP OR SPAC? OR WIDTH OR
               APERTURE OR WELL OR CHANNEL)

=> s l2 and voltage (8w) bias (s) across (s) (electrode or gap or spac? or width or
aperture or well or channel)
   2 FILES SEARCHED...
L3            6 L2 AND VOLTAGE (8W) BIAS (S) ACROSS (S) (ELECTRODE OR GAP OR
                SPAC? OR WIDTH OR APERTURE OR WELL OR CHANNEL)

=> display l3 1-6 ibib abs

L3   ANSWER 1 OF 6  CAPLUS  COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:         2004:995728  CAPLUS
DOCUMENT NUMBER:          141:419191
TITLE:                    Controlled fabrication of gaps in electrically
                          conducting structures
INVENTOR(S):              Golovchenko, Jene A.; Schurmann, Gregor M.; King,
                          Gavin M.; Branton, Daniel
PATENT ASSIGNEE(S):       President and Fellows of Harvard College, USA
SOURCE:                   U.S. Pat. Appl. Publ., 65 pp., Cont.-in-part of U.S.
                          Ser. No. 367,075.
                          CODEN: USXXCO
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   12
PATENT INFORMATION:

     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
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PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
US 2004229386	A1	20041118	US 2004-767102		20040129
US 6464842	B1	20021015	US 2000-599137		20000622
WO 2003003446	A2	20030109	WO 2002-US20734		20020627
WO 2003003446	A3	20031218			

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2002315497	A1	20030303	AU 2002-315497		20020627
US 2003066749	A1	20030410	US 2002-186105		20020627
US 6783643	B2	20040831			
JP 2005520178	T	20050707	JP 2003-509524		20020627
PRIORITY APPLN. INFO.:			US 1999-140201P	P	19990622
			US 2000-599137	A2	20000622
			US 2001-301400P	P	20010627
			US 2002-357281P	P	20020215
			US 2002-186105	A2	20020627
			US 2003-444471P	P	20030203
			US 2003-367075	A2	20030214
			US 1999-140021P	P	19990622
			WO 2002-US20734	W	20020627

AB A method for controlling a gap in an elec. conducting solid state structure provided with a gap. The structure is exposed to a fabrication process environment conditions of which are selected to alter an extent of the gap. During exposure of the structure to the process environment, a voltage bias is applied across the gap. Electron tunneling current across the gap is measured during the process environment exposure and the process environment is controlled during process environment exposure based on tunneling current measurement. A method for controlling the gap between elec. conducting electrodes provided on a support structure. Each electrode has an electrode tip separated from other electrode tips by a gap. The electrodes are exposed to a flux of ions causing transport of material of the electrodes to corresponding electrode tips, locally adding material of the electrodes to electrode tips in the gap.

L3 ANSWER 2 OF 6 CAPLUS

ACCESSION NUMBER: 2004:740626 CAPLUS
DOCUMENT NUMBER: 141:252558
TITLE: Controlled fabrication of gaps in electrically conducting structures
INVENTOR(S): Golovchenko, Jene A.; Schurmann, Gregor M.; King, Gavin M.; Branton, Daniel
PATENT ASSIGNEE(S): President and Fellows of Harvard College, USA
SOURCE: PCT Int. Appl., 140 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 12
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004077503	A2	20040910	WO 2004-US2502	20040129
WO 2004077503	A3	20050331		

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 NEWS 11  APR 30  INPADOC replaced by INPADOCDB on STN
 NEWS 12  MAY 01  New CAS web site launched
 NEWS 13  MAY 08  CA/CAplus Indian patent publication number format defined
 NEWS 14  MAY 14  RDISCLOSURE on STN Easy enhanced with new search and display
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 NEWS 15  MAY 21  BIOSIS reloaded and enhanced with archival data
 NEWS 16  MAY 21  TOXCENTER enhanced with BIOSIS reload
 NEWS 17  MAY 21  CA/CAplus enhanced with additional kind codes for German
                  patents
 NEWS 18  MAY 22  CA/CAplus enhanced with IPC reclassification in Japanese
                  patents
 NEWS 19  JUN 27  CA/CAplus enhanced with pre-1967 CAS Registry Numbers
 NEWS 20  JUN 29  STN Viewer now available
 NEWS 21  JUN 29  STN Express, Version 8.2, now available
 NEWS 22  JUL 02  LEMBASE coverage updated
 NEWS 23  JUL 02  LMEDLINE coverage updated
 NEWS 24  JUL 02  SCISEARCH enhanced with complete author names
 NEWS 25  JUL 02  CHEMCATS accession numbers revised
 NEWS 26  JUL 02  CA/CAplus enhanced with utility model patents from China
 NEWS 27  JUL 16  CAplus enhanced with French and German abstracts
 NEWS 28  JUL 18  CA/CAplus patent coverage enhanced

 NEWS EXPRESS  29 JUNE 2007:  CURRENT WINDOWS VERSION IS V8.2,
               CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 05 JULY 2007.

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RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1592641	A2	20051109	EP 2004-737266		20040129

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

JP 2006523144	T	20061012	JP 2006-503137		20040129
PRIORITY APPLN. INFO.:			US 2003-444471P	P	20030203
			WO 2004-US2502	W	20040129

AB A method is disclosed for controlling a gap in an elec. conducting solid state structure. The structure is exposed to a fabrication process environment conditions of which are selected to alter an extent of the gap. During exposure of the structure to the process environment, a voltage bias is applied across the gap. Electron tunneling current across the gap is measured during the process environment exposure and the process environment is controlled during process environment exposure based on tunneling current measurement. A method is described for controlling the gap between elec. conducting electrodes provided on a support structure. Each electrode has an electrode tip separated from other electrode tips by a gap. The electrodes are exposed to a flux of ions causing transport of material of the electrodes to corresponding electrode tips, locally adding material of the electrodes to electrode tips in the gap.

L3 ANSWER 3 OF 6 COMPENDEX

ACCESSION NUMBER: 2006(22):18493 COMPENDEX

TITLE: Intrinsic tunnelling effects in self-doped la0.89MnO3 single crystals.

AUTHOR: Markovich, V. (Department of Physics Ben Gurion University of the Negev, 84105 Beer Sheva, Israel); Jung, G.; Belogolovskii, M.; Yuzhelevski, Y.; Gorodetsky, G.; Mukovskii, Ya.M.

SOURCE: European Physical Journal B v 50 n 4 April 2006 2006.p 587-592

SOURCE: European Physical Journal B v 50 n 4 April 2006 2006.p 587-592
ISSN: 1434-6028 E-ISSN: 1434-6036

PUBLICATION YEAR: 2006

DOCUMENT TYPE: Journal

TREATMENT CODE: Theoretical; Experimental

LANGUAGE: English

AN 2006(22):18493 COMPENDEX

AB Transport properties of self-doped La0.89MnO3 single crystals with Neel temperature of TN approx.= 139 K have been investigated in wide temperature range 10-300 K. Data suggests that current at low temperature is conducted through a strongly temperature-dependent, but almost bias independent channel operating in parallel with a bias controlled but temperature independent channel. The first channel is associated with transport across an insulating antiferromagnetic matrix while the latter one represents tunnel conductivity through intrinsic tunnel junctions appearing due to interruption of conducting percolating paths by phase separated insulating inclusions. Tunnel character of the conductivity manifests itself in nonlinear current-voltage characteristics and appearance of a zero-bias anomaly in the form of a prominent

conductance peak in the vicinity of zero bias. Zero bias anomaly and V-shaped characteristics of the differential conductance at high voltages are ascribed to the formation of local magnetic states in the insulating region of the tunneling junction. 41 Refs.

L3 ANSWER 4 OF 6 INSPEC (C) 2007 IET on STN

ACCESSION NUMBER: 2007:9235610 INSPEC

TITLE: Intrinsic tunnelling effects in self-doped La0.89MnO3 single crystals

AUTHOR: Markovich, V.; Jung, G.; (Dept. of Phys., Ben-Gurion Univ. of the Negev, Beer-Sheva, Israel), Belogolovskii, M.; Yuzhelevski, Y.; Gorodetsky, G.; Mukovskii, Ya.M.

SOURCE: European Physical Journal B (April 2006), vol.50, no.4, p. 587-92, 34 refs.
CODEN: EPJBFY, ISSN: 1434-6028
SICI: 1434-6028(200604)50:4L.587:ITES;1-E
Published by: EDP Sciences; Springer-Verlag, France

DOCUMENT TYPE: Journal

TREATMENT CODE: Experimental

COUNTRY: France

LANGUAGE: English

AN 2007:9235610 INSPEC

AB Transport properties of self-doped La0.89MnO3 single crystals with Neel temperature of TN ≈ 139 K have been investigated in wide temperature range 10-300 K. Data suggests that current at low temperature is conducted through a strongly temperature-dependent, but almost bias independent channel operating in parallel with a bias controlled but temperature independent channel. The first channel is associated with transport across an insulating antiferromagnetic matrix while the latter one represents tunnel conductivity through intrinsic tunnel junctions appearing due to interruption of conducting percolating paths by phase separated insulating inclusions. Tunnel character of the conductivity manifests itself in nonlinear current-voltage characteristics and appearance of a zero-bias anomaly in the form of a prominent conductance peak in the vicinity of zero bias. Zero bias anomaly and V-shaped characteristics of the differential conductance at high voltages are ascribed to the formation of local magnetic states in the insulating region of the tunneling junction

L3 ANSWER 5 OF 6 INSPEC (C) 2007 IET on STN

ACCESSION NUMBER: 2003:7639398 INSPEC

DOCUMENT NUMBER: A2003-13-7340R-002; B2003-07-2530G-001

TITLE: On the calculation of the magnetoresistance of tunnel junctions with parallel paths of conduction

AUTHOR: Kuising Wang; Levy, P.M.; (Dept. of Phys., New York Univ., NY, USA), Shufeng Zhang; Szunyogh, L.

SOURCE: Philosophical Magazine (1 April 2003), vol.83, no.10, p. 1255-86, 40 refs.ISSN: 1478-6435
SICI: 1478-6435(20030401)83:10L.1255:CMTJ;1-4
Published by: Taylor & Francis, UK

DOCUMENT TYPE: Journal

TREATMENT CODE: Practical; Theoretical

COUNTRY: United Kingdom

LANGUAGE: English

AN 2003:7639398 INSPEC DN A2003-13-7340R-002; B2003-07-2530G-001

AB At the interfaces between the metallic electrodes and barrier in magnetic tunnel junctions it is possible for localized states to form which arc orthogonal to the itinerant slates for the junction, as well as resonant states that can form at the interfaces. These states form highly conducting paths across the barrier when their orbitals point directly into the barrier; these paths are in addition to those formed by the itinerant states across the

entire junction. Most calculations of transport in magnetic tunnel junctions are made with the assumptions that the transverse momentum of the tunnelling electrons is conserved, in which case the itinerant electron states remain orthogonal to localized states. In principle it is possible to include diffuse scattering in both the bulk of the electrodes and the barrier so that the transverse momentum is not conserved, as well as the processes that couple localized states at the electrode-barrier interface to the itinerant states in the bulk of the electrodes. However, including these effects leads to lengthy calculations. Therefore, to assess the conduction across the barrier through the localized states that exist in parallel to the itinerant states we propose an approximate scheme in which we calculate the conductance of only the barrier region. While we do not take explicit account of either of the effects mentioned above, we do calculate the tunnelling through all the states that exist at the electrode-barrier interfaces by placing reservoirs directly across the barriers. To calculate the current and magnetoresistance for magnetic tunnel junctions (the junction magnetoresistance (JMR)) we have used the lattice model developed by Caroli et al. The propagators, density of states and hopping integrals entering the expressions for the current are determined by using the spin polarized scalar-relativistic screened Korringa-Kohn-Rostoker method that has been adapted to layered structures. By using vacuum as the insulating barrier we have determined with no adjustable parameters the JMR in the linear response region of tunnel junctions with fcc Co(100), fccNi(100) and bcc Fe(100) as electrodes. The JMR ratios that we find for these metal/vacuum/metal junctions are comparable with those measured with alumina as the insulating barrier. For vacuum barriers we find that tunnelling currents have minority-spin polarization whereas the tunnelling currents for these electrodes have been observed to be positively (majority) polarized for alumina barriers and minority polarized for SrTiO3 barriers. In addition to determining the JMR ratios in linear response we have also determined how the magnetoresistance of magnetic tunnel junctions varies with a finite voltage bias applied across the junction. In particular we have found how the shape of the potential barrier is altered by the applied bias and how this affects the current. Comparisons with data as they become available will eventually determine whether our approximate scheme or the ballistic Landauer-Buttiker approach is better able to represent the features of the electronic structure that control tunnelling in magnetic tunnel junctions

L3 ANSWER 6 OF 6 INSPEC (C) 2007 IET on STN

ACCESSION NUMBER:	1996:5431728 INSPEC
DOCUMENT NUMBER:	A1997-01-7340Q-003; B1997-01-2530F-005
TITLE:	Direct extraction of the electron tunneling effective mass in ultrathin SiO2
AUTHOR:	Brar, B.; Wilk, G.D.; Seabaugh, A.C. (Corp. Res. Labs., Texas Instrum. Inc., Dallas, TX, USA)
SOURCE:	Applied Physics Letters (28 Oct. 1996), vol.69, no.18, p. 2728-30, 12 refs. CODEN: APPLAB, ISSN: 0003-6951 SICI: 0003-6951(19961028)69:18L.2728:DEET;1-7 Price: 0003-6951/96/69(18)/2728/3/$10.00 Doc.No.: S0003-6951(96)04644-X Published by: AIP, USA
DOCUMENT TYPE:	Journal
TREATMENT CODE:	Experimental
COUNTRY:	United States
LANGUAGE:	English

AN 1996:5431728 INSPEC DN A1997-01-7340Q-003; B1997-01-2530F-005

AB Electron transport in ultrathin (t0x<40 A) Al/SiO2/n-Si structures is dominated by direct tunneling of electrons across the SiO2

barrier. By analyzing the tunneling currents as a function of the SiO_2 layer thickness for a comprehensive set of otherwise identical samples, we are able to extract an effective mass for the tunneling electron in the SiO_2 layer. Oxide films 16-35 A thick were thermally grown in situ in a dry oxygen ambient. The oxide thicknesses were determined by capacitance-voltage measurements and by spectroscopic ellipsometry. The tunneling effective mass was extracted from the thickness dependence of the direct tunneling current between an applied voltage of 0 and 2 V, a bias range that has not been previously explored. Employing both a parabolic and a nonparabolic assumption of the E-κ relationship in the oxide forbidden gap, we found the SiO_2 electron mass to be $m_P^*=0.30\pm0.02\ m_e$, and $m_{NP}^*=0.41\pm0.01\ m_e$, respectively, independent of bias. Because this method is based on a large sample set, the uncertainty in the mass determination is significantly reduced over prior current-voltage fitting methods

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1	BRS	L1	9103	tunneling near6 current	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB
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1	BRS	L1	33	("20030058799"|"20030187237"|"20040229386"|"20050006224"|"20050126905"|"20050241933"|"4455192"|"4728591"|"4855197"|"5091320"|"5244527"|"5319197"|"5420067"|"5486264"|"5556462"|"5753014"|"5780852"|"5789024"|"5798042"|"5838005"|"5851842"|"5868947"|"5876880"|"5893974"|"5962081"|"5969345"|"6080586"|"6106677"|"6383826"|"6426296"|"6464842"|"6627067"|"6783643").PN.	US-PGPUB; USPAT
2	BRS	L2	3	1 and tunneling near6 current	US-PGPUB; USPAT
3	BRS	L3	2013	tunneling near6 current with (gap or hole or well or aperture or channel or space or spacing or width or distance)	US-PGPUB; USPAT
4	BRS	L4	3737	tunneling near6 current same (gap or hole or well or aperture or channel or space or spacing or width or distance)	US-PGPUB; USPAT
5	BRS	L5	804	4 and solid near6 state	US-PGPUB; USPAT
6	BRS	L6	320	4 and solid near6 state same (gap or hole or well or aperture or channel or space or spacing or width or distance)	US-PGPUB; USPAT
7	BRS	L7	0	4 and eletrode with (gap or hole or well or aperture or channel or space or spacing or width or distance)	US-PGPUB; USPAT
8	BRS	L10	1549	4 and electrode with (gap or hole or well or aperture or channel or space or spacing or width or distance)	US-PGPUB; USPAT

	Type	L #	Hits	Search Text	DBs
9	BRS	L11	1981	4 and electrode same (gap or hole or well or aperture or channel or space or spacing or width or distance)	US-PGPUB; USPAT